

Investigating employee resistance to lean transformation: UK case study

INVESTIGATING EMPLOYEE RESISTANCE TO LEAN TRANSFORMATION: UK CASE STUDY

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Abstract

Lean is a business process transformation approach that eliminates ‘wastes’ – activities that generate no value for the customer. Lean originated from the production line but is widely implemented in the service sector. This study investigates human and social factors in a Lean transformation in a ‘knowledge worker’ environment. We identify a paradox: a successful Lean programme in the service sector develops staff who are educated and empowered and thus potential opponents to future business change. We offer five recommendations for organizations undertaking Lean transformations: (1) Build an in-house organization-wide ‘Lean Team’ to drive the programme rather than hiring external consultants; (2) Ensure participation is recognized and rewarded; (3) Replace departmental parochialism with a genuinely corporate vision; (4) Align the Lean programme with corporate information strategies; (5) Incorporate Lean thinking into the organizational culture.

Keywords: Lean, resistance, transformation, change, JIT

1.0 Introduction

1.1 What is ‘Lean’?

Since the seminal publication *The Machine That Changed The World* (Womack, Jones & Roos, 1990) documented the inception of the Toyota Production System, the Lean philosophy has evolved and been employed by industries across the globe. The application of Lean has spanned logistics, services, retail, healthcare, construction, maintenance and government.

‘Lean’ is the practice of the elimination of activities that do not generate value for the customer, thus maximising efficiency and the effective utilisation of resources. It was developed in an environment of fierce competition and recession in the Japanese automobile market (Hines, Holweg & Rich, 2004). A waste is defined as any human

activity which absorbs resources but creates no value (Womack & Jones, 2003). Value-adding activities are those that the customer is willing to pay for: everything else is waste.

Lean results in the consumption of less of everything in mass production: less effort, less space, less investment in tools, less man-hours and less on-site inventory (Womack, Jones & Roos, 1990). The reduced consumption, higher throughput and refined production flow should create significant financial savings. Lean has been called a “fragile approach” – one that is often misinterpreted or misapplied (George, 2002; Womack, Jones & Roos, 1990) but can provide manufacturers with the flexibility and speed needed to meet global competition (Blackburn, 1991). Fullerton, McWatters & Fawson (2003) made a study of 253 US manufacturers and demonstrated that a positive relationship exists between profitability and the degree to which waste-reducing production practices are implemented. The ‘New Lean’ methodology has emerged from the production line, enriched with contributions from Six Sigma, business process reengineering (BPR), service quality, service operations, and marketing (Bicheno, 2004; Hines, Holweg & Rich, 2004).

A key principle in Lean is empowerment of the employee (Womack, Jones & Roos, 1990), which is achieved through involvement in problem-solving, decision-making and continuous improvement (Vidal, 2007). Some researchers criticise Lean for its ‘restrictive application to automotive manufacture’ and disregard of human aspects (Hines, Holweg & Rich, 2004). Conversely, others argue that Lean principles can be applied to the human instead of the machine (Bicheno, 2004). Bowen & Youngdahl (1998) posit that it can be practical and effective to apply ‘Lean imaginations’ to service industries with successful results.

Realising the benefits of Lean depends upon the key assets of an organization: the workers. In manufacturing situations, the management are typically able to wield extensive control over their workers, imposing new methods and changes to processes as they see fit. What impact would such an approach have on a situation where people were already empowered, already responsible and already able to manage their own working? How would people react to being told how to do their work or having such fundamental change imposed on them? Such an authoritarian approach in service

environments may breed resistance, reluctance, non-participation, poor morale and ultimately jeopardise the success of the programme.

It has been argued that Lean is a neo-Taylorist 'scientific management' method that exploits workers to achieve unrewarding, even mindless, efficiency (Pruijt, 2003). In some cases, Lean programmes in production environments have increased the polarisation between staff groups by enriching the skills of some while de-skilling others (Gottfried, 1998). However, this study deals with the service sector rather than mass production. We argue that necessarily autonomous knowledge workers in a service organisation are less likely to operate in a neo-Taylorist milieu and that our data supports the thesis that such workers have the potential to both influence and benefit from Lean transformations.

Why is Lean relevant to the discipline of information systems? This paper presents data to argue that a successful Lean programme in the service sector requires close alignment with organisational information strategy and that relentless changes to information systems to support fluctuating business requirements without a longer-term strategy can have a detrimental impact on efficiency and data workflow.

1.2 Employee Resistance

Resistance is any conduct that strives to maintain the status quo in the face of pressure to change (Zaltman & Duncan, 1977). It is perceived by many as a responsive behaviour which is intended to 'protect an individual from the effects of real or imagined change' (Zander, 1950), that it is the 'active or passive opposition to change and the management of change' (Lientz & Rea, 2003). The concept of resistance amongst the workforce is often considered as a directly opposing force to successful change and that 'change can only occur if the force promoting change exceeds the resisting forces' (Sherman & Garland, 2007).

Resistance itself can be conceptualized in three forms; as a cognitive state, as an emotional state, and as a behaviour (Piderit, 2000). There exist two categories of resistance: passive and active. Passive resistors only 'perceive the negative in change and express discontent through complaints, moans and grumbles', however they are followers in the resistance effort and will replicate what the majority of people do (Geller, 2000). Active resistance, on the other hand, is rarer than passive as it involves individuals openly disagreeing and opposing the change (Lientz & Rea, 2003) through

deliberate hampering, criticism and even destructive behaviour and sabotage (Thomas, 2001). Kotter & Schlesinger (1979) highlighted 4 fundamental reasons why people resist change: (1) parochial self-interest, (2) misunderstanding, (3) low tolerance to change and (4) disagreement in principle.

People fear change because it always involves both creation and destruction (Cashman, 2008). Seldom do people express resistance to change without considering the potential negative implications for themselves (Piderit, 2000), suggesting that resistance is not always irrational and unstructured but is often a thoughtful, constructive mechanism (Wegener, Petty, Smoak & Fabrigar, 2004).

Some posit that it is the act of *being* changed that people resist rather than the implications of the change itself (Bregman, 2009), but the underlying dynamic of resistance is one's defence from the fear of loss, that the 'change cannot be survived without the loss of something familiar' (Cashman, 2008).

1.3 Research Objectives

Despite the ever-growing popularity of Lean in enterprises outside manufacturing, there is limited research to provide assistance for the human resource issues in implementing Lean. Notably, the service industry must rely upon expensive consultancy to plan and guide Lean implementations.

Therefore, the aim of this study was to assess the social factors that may be encountered in the implementation of Lean in 'knowledge worker' environments and the impact such factors may have on the success of a Lean programme. The study objective was to build a framework of implementation for a service-sector enterprise. The framework recommends best practice and identifies preconditions to change to improve the effectiveness of a Lean change programme. Ultimately, the goal is to develop the scope of Lean to consider complex human factors and social consideration and thus advance the Lean methodology.

1.4 Research Setting

The study investigated an organization that was undergoing the implementation of a Lean programme. Although such case studies can only be cautiously generalized, they can provide a good source on which to base new hypotheses (Saunders, Lewis & Thornhill, 2003). Hence it is important to note that this paper presents the findings

from the research not to substantiate hypotheses, but to explore a particular representation of a phenomenon that is likely to be relevant to other situations. The research involved both the workers and the Lean project team to identify and analyze differing perspectives to construct a holistic view of the real-world situation.

The subject organization was a UK-based international business with approximately 120 office staff. The company operates in the manufacturing market but focuses heavily on service operations to reinforce the production activities. The directors decided to implement a Lean programme for all business operations to improve customer service and focus capacity utilisation on more productive activities. The programme had been in effect for 18 months, with a further year until completion.

1.5 Methodology

Quantitative and qualitative data was collected using a survey designed for the purpose. Further qualitative data was collected in follow-up interviews. The research questions underlying the survey were:

- Do workers perceive Lean to be directly beneficial to them as individuals?
- What amount of an individual's workday is spent working with technology?
- Are the IT facilities and training available for relevant workers suitable?
- To what extent is the participation of employees encouraged by the programme?
- What is the overall sentiment held by workers toward the Lean programme?

A semi-fixed design was utilized for the interview structures as it permitted freedom in the sequencing of questions, the wording of questions and the amount of attention given to each topic (Robson, 2002). Quantitative survey data was analyzed by simple tabular summary of the closed questions and by calculating 95% confidence intervals for the Likert scale questions.

The qualitative analysis of the interview data was guided by a constructivist approach (Charmaz, 2006). This approach emphasises flexible guidelines and iterative adaptation. The themes and inter-relationships that emerged from the data are presented in diagrams, showing a central theme at the apex.

The focus of the survey was on the individuals and groups that were subject to the Lean implementation rather than the implementation team. Therefore the survey was

issued to all office staff at the company with the exception of the Lean programme team, the IT Department and the highest level management.

The personnel selected for interview were: the owner and champion of the Lean programme, a Lean practitioner and an IT developer working with the programme. These were chosen to provide, respectively, (1) the holistic, organizational and political elements, (2) more detailed, frontline aspects of the implementation and (3) insight into the technological aims and considerations of the programme.

2.0 Data Analysis

In this section, a summary and critical discussion of the survey findings is presented in 2.1-2.3 and the qualitative analysis of the interviews is reported in 2.4-2.5.

2.1 Survey Results

Thirty survey responses were received, summarized in Table 1. Questions 1-5 give the demographic characteristics and questions 6-16 present the substantive content.

Question		Response					
1	Sex	Male			Female		
		13			17		
2	Age Group	18-24	25-34		35-49	50+	
		1	7		15	7	
3	Employment type	Full-time		Part-time		Contractor	
		29		1		0	
4	Employment duration	< 2 years	3-5 years	6-10 years	10-15 years	16+ years	
		5	5	5	10	5	
5	Job categorisation	Admin	Sales & Marketing	R&D	Managerial	Other	
		6	11	5	4	4	
6	Communication preference	Face-to-face	Phone		Email	Combination	
		13	2		0	15	
7	Percentage of workday spent at PC/laptop?	< 10%	11%-25%	26%-50%	51%-75%	75%+	
		0	0	1	7	21	

8	Sufficient training and support for use of hardware and software?	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
		4	22	0	4	0
9	IT equipment sufficient for daily tasks?	4	21	0	5	0
10	My department will benefit from process changes?	6	18	2	4	0
11a	What was the duration of your engagement with the Lean programme?	None	1-5 days	1-2 weeks	3-4 weeks	1 month+
		0	8	7	4	11
11b	Was this sufficient?	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
		0	14	10	5	1
12a	Have you contributed to Lean through suggestions of your own?	Yes		No		
		22		8		
12b	Feel able to make suggestions on potential improvements?	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
		6	18	2	2	2
13	Daily working improved by Lean changes?	1	7	13	7	3
14	Are you working new technology arising from the Lean project?	Yes		No		
		16		14		
15a	Sufficient training for use of technology arising from Lean programme?	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
		3	10	8	7	1
15b	Have you been able to attend all training sessions?	Yes		No		
		22		8		
16	Workload negatively affected due to Lean project?	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
		7	11	2	9	1

Table 1. Summary of survey responses.

2.2 Scaled Responses

This section offers a further analysis of the scaled responses. Although the categories of agreement or disagreement are strictly ordinal, we argue that participants in fact perceive a symmetrical continuum and therefore that calculation of the mean and 95% confidence interval is a meaningful analysis (Scott, Briggs, Wyatt & Georgiou, 2010). In this analysis, the convention adopted for numerical values is that “Strongly Agree”=1, “Agree”=2, “Unsure”=3, “Disagree”=4, “Strongly Disagree”=5.

Question		Mean	95% Confidence Interval
Q8	Sufficient training and support for use of hardware and software?	2.13	1.84 – 2.43
Q9	IT equipment sufficient for daily tasks?	2.20	1.88 – 2.52
Q10	My department will benefit from process changes?	2.13	1.81 – 2.46
Q11b	Was duration of your engagement with the Lean programme sufficient?	2.76	2.46 – 3.07
Q12b	Feel able to make suggestions on potential improvements?	2.20	1.82 – 2.58
Q13a	Daily working improved by Lean changes?	3.13	2.77 – 3.49
Q15a	Sufficient training for use of technology arising from Lean programme?	2.75	2.37 – 3.14
Q16	Workload negatively affected due to Lean project?	2.53	2.09 – 2.98

Table 2. Confidence intervals of scaled responses.

None of the responses had a confidence interval that included clear disagreement (≥ 4). Four confidence intervals (questions 8, 9, 10, 12b) fell between agreement (< 2) and uncertainty (3). Questions 11b, sufficient duration of Lean programme duration,

15a, sufficiency of new technology training, and 16, workload impact, showed similar responses between agreement and uncertainty but tending closer to uncertainty. Question 13a, whether daily working had been improved by the Lean programme, had a mean response close to uncertainty, with the confidence interval including weak disagreement (3.49).

2.3 Survey Discussion

The majority of respondents agreed that the application of Lean concepts has the potential to improve their day-to-day working, suggesting that the company has succeeded in conveying its ideas and intentions. However, implementation of such concepts is a slow process and so improvements are unlikely to surface until the programme nears completion.

The vast majority of respondents spend over half their workday at a PC or laptop. This confirms the organization is largely a 'knowledge business' and has a major reliance upon technology. The majority of respondents perceive the IT infrastructure to be suitable for their day-to-day working.

The majority of individuals are actively involved and participate in the Lean programme through suggesting ideas and potential improvements. Even though the survey analysis shows that some suggestions may be discounted or even ignored, overall the Lean programme appears to take a highly participatory approach to the mapping, analysis and improvement of processes and procedures.

The Lean programme at the company generally receives support and positivity from its employees. A programme of this magnitude will inevitably cause disagreements or resistance; however respondents appear to be in support of the programme, its motivations, and the improvements it could potentially bring to their daily activities.

2.4 Interviews

The survey analysis and discussion raised a number of issues worthy of further investigation:

- The methods used to convey Lean concepts to the workforce
- The consideration given to technology and the effect of upgrading systems
- The role of training when introducing Lean into an organization.

- The importance of measures to alleviate work pressure and build-up
- The importance of channels of communication for idea submission.

Three employees of the organization that were heavily involved in the Lean project were identified for interview:

- Business Operations Director – The “owner” of the lean programme
- Lean Transformation Engineer – Lean practitioner and programme leader
- Enterprise Systems Developer – IT specialist seconded to the Lean programme

Based on the issues discussed above, a selection of detailed research questions for the purpose of the interviews was composed:

- To what extent were Lean material or concepts modified to be applicable to the company?
- How were Lean ideas and concepts initially communicated to the employee base?
- To what extent did technology, both new and existing, influence the direction of the programme?
- Was any consideration given to the varying knowledge and ability of users when compiling and organising the training sessions?
- How was the degree of involvement of staff determined in order to maximise Lean effectiveness?
- Was any consideration or appropriate flexibility given to the build-up of employee workloads as a result of commitments to the Lean programme?
- How is the success of Lean modifications judged and measured?

2.5 Interview Analysis

The aim of the qualitative analysis is to identify themes from the interview data using a constructivist approach. The themes that emerge from the data are presented using diagrams that represents the relationships between the themes. A central theme is established after analysis of the different themes and is presented at the pinnacle of the diagram. Supporting themes that reinforce the central theme are displayed below the lines to represent relationships.

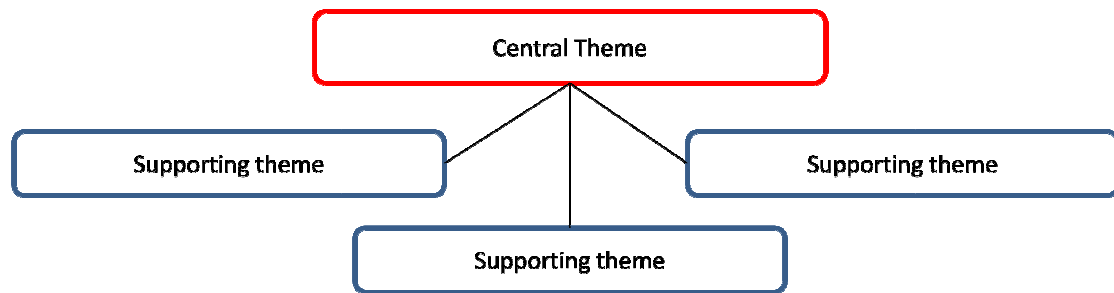


Figure 1 Thematic diagram convention

As the interviews generated large volumes of data, not all of which can be addressed here, we have presented only our key findings. (“Qu.” is the quotation reference.)

2.5.1 Theme 1: Engaging and motivating staff

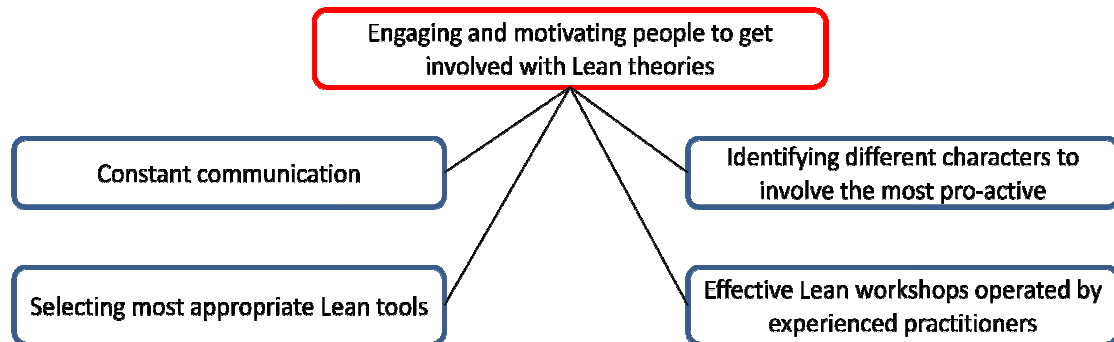


Figure 2 Theme 1 elements

Qu.111: “Lean is actually quite straight forward ... With Lean methodologies, if you have people that understand Lean, you can apply it to anything.”

Qu.112: “We focussed on process re-engineering; ... value-stream mapping ... It was a straightforward approach, but really engaging the people was the key.”

Qu.113: “We looked at how we could remove ... frustrations and show what’s in it for them to give them an entry point, to get them motivated and get them involved.”

Qu.114: “... identify in the group those people who were the shakers, the movers, the implementers, because if you can hook them in, then things start to happen. Once things start to happen, then you suck through the people that are happy to go along with it and leave the people saying ‘this can’t be done better’ isolated, and sometimes even get them on-board.”

Box 1 Quotations relating to Theme 1

Lean itself is not perceived by the Lean owner as complicated or difficult and he believes that the underlying concepts are intuitive (Qu.111). The key in making Lean a success is engaging people to participate in the programme (Qu. 112).

A method used by the project team to communicate Lean concepts was to relate with them at a level they would respond by allowing them to vent their frustrations, then present potential Lean solutions to demonstrate the benefits it can bring (Qu.113)

The managers of the Lean implementation employed the idea of identifying and 'labelling' types of people in the initial workshops to focus attention on individuals who understood and were energized by Lean to get them on-side and encourage others to get involved, whilst leaving those who displayed no interest in the project separated (Qu.114).

2.5.2 Theme 2: Initiating cultural shift

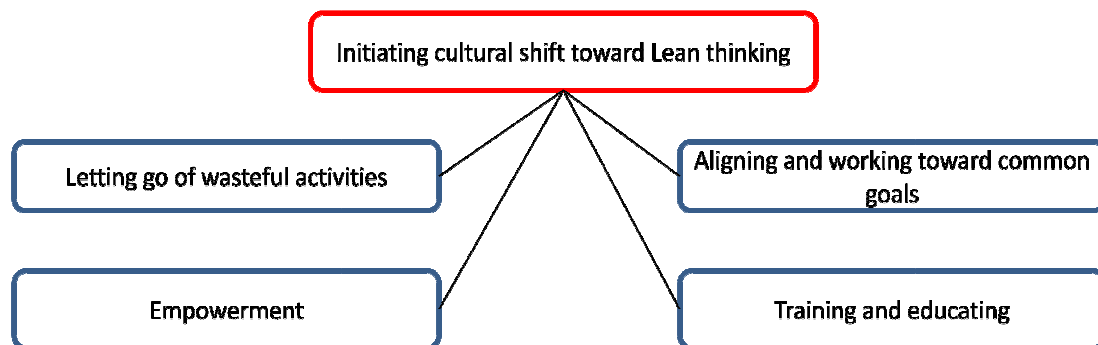


Figure 3 Theme 2 elements

Qu.211: “It was all about empowerment and getting people to think for themselves and manage their time properly, and not necessarily having someone dictate to them how they’re supposed to work in their jobs.”

Qu.212: “People often came to the Lean sessions with a lot of preconceptions about what Lean was, and that was the biggest challenge; getting people to realise that they had a role to play and it wasn’t just their managers telling them what to do.”

Qu.213: “It was all about trying to get people to work together towards a common goal, and driving a cultural shift as much as it was about cost savings.”

Box 2 Quotations relating to Theme 2

An aspect that resurfaced throughout the interviews was responsibility – getting individuals to take responsibility for their own work (Qu.211). Individuals working at lower levels of the hierarchy can become complacent and lack interest in the work itself. Many of such staff will look to managers for direction and instruction, but Lean attempts to instill a sense of self-actualisation. The aim of the Lean programme at the company was to break down these ingrained perceptions of non-responsibility and get people to realise that they have a key role in programme (Qu.212).

The interviewees also commented upon the criticality of all individuals working together towards a common goal, emphasising the importance of the unification of all employees involved in the programme (Qu. 213). The concept of instigating culture shift towards Lean thinking and continual improvement is considered as a focal aspect of the programme's success.

2.5.3 Theme 3: Effective training

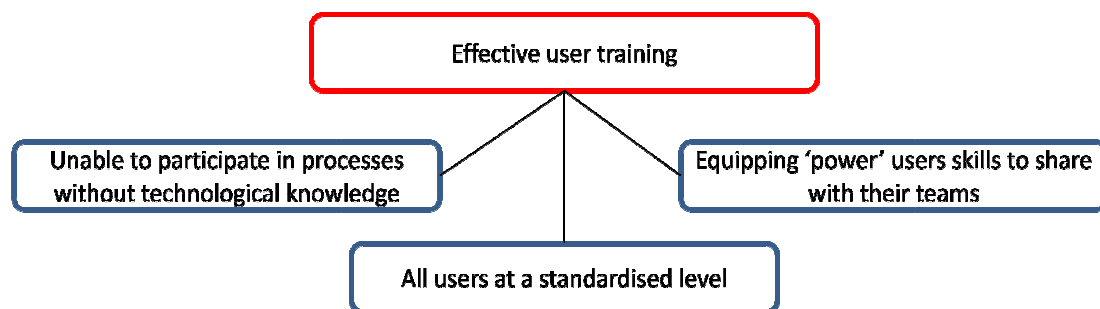


Figure 4 Theme 3 elements

Qu. 311: “There was not a lot of PC use prior to the Lean programme being put in place. A lot of users were very basic in their usage of IT systems.”

Qu.312: “Some people picked it up quicker, other people didn’t. But there was an end target... a test that people needed to pass to be certified to use the systems with a level of competency, so we had to bring everyone up to a specific level.”

Qu.313: “A lot of the settings that we put into the systems in order to make them function were driven by the key users within areas... then they would take information back to their teams and it would trickle out that way.”

Box 3 Quotations relating to Theme 3

The introduction of technology into established environments offers unique challenges. The interviews highlighted that a core aspect of this was minimal prior use and knowledge of technology (Qu. 311).

Training is often a complex undertaking as it deals with a range of individuals with different expertise, preferences and learning styles (Qu. 312). In an attempt to simplify the standardisation of knowledge and skill acquisition, an end target template was compiled to ensure all users meet the minimum requirement to use new information technology resultant from Lean modifications (Qu. 312).

Again, the concept of identifying and focussing on key users resurfaced. The key users acted essentially as 'user representatives' to discuss departmental and user requirements (Qu. 313). By focussing and informing key individuals, knowledge filtered back to others through sharing and discussing with colleagues (Qu. 313).

2.6 Interview Discussion

Frequent areas of overlap from the interviews were mainly present between the Lean owner and Lean practitioner. Both the interviewees discussed the importance and difficulties of encouraging employees to become involved in the programme. The Lean owner took a more authoritarian approach to engaging employees, stating that those who were reluctant to participate were left '*isolated*' and even '*had arguments with people about clearly a better way of doing things but they still don't want to change*'. The Lean practitioner, on the other hand, appeared somewhat more compassionate to the delicacies of human nature. This may be due to their face-to-face involvement with individuals because '*getting them to think about what they spend their time doing and why was quite emotional for a lot of people*'.

However, both the Lean owner and Lean practitioner corroborated that the Lean programme was never intended to be a '*cost-cutting exercise*', but to release capacity within individuals and the organization. Unsurprisingly, the Lean owner took a more holistic perspective on capacity release referring to the future direction and growth of the company. On the other hand, the Lean practitioner working on the frontline of the implementation focussed more on capacity at an individual level. Hierarchical status will undoubtedly influence the scope of perspective an individual may possess, yet it does demonstrate that those involved are indeed working towards common objectives.

The main contradictions existed between the Lean owner and the IT specialist. The Lean owner frequently commented on the importance of mapping processes without the presence of technology in order to construct the most '*pure*' version of the process before introducing limitations of technology. Conversely, the IT specialist emphasized the criticality of technology in all company processes and the benefits it can bring, stating that '*IT hardware is a necessity*' and '*if people didn't have the right hardware then they cannot partake in that process*'.

The project team featured in this case study had a clear and focussed view on the objectives of the project and were aware of the inherent complexities discovered in the implementation, including resistance, reluctance, and encouraging participation in the workforce.

3.0 Discussion

3.1 Change without resistance – 'You shall obey!'

Resistance and unwillingness has continually been perceived as an opposing force to the driving decisions of business change (Lewin, 1952). However, this study posits that change without resistance is evidence that employees were not fully engaged or committed to current processes and systems. Widespread acceptance from the workforce towards fundamental business change is testament to the failings of the previous systems and organization. Resistance can be argued to be a useful and effective survival mechanism to assist management in decision-making to avoid unnecessary or ill-advised change (de Jager, 2001). Resistance, in fact, should be perceived as an inevitability to be addressed and steadily reduced, rather than an adversary of change to be eradicated. Management would be naïve to at first forcefully impose change, dismiss employee opinions and crush resistance, then later in the Lean programme lifecycle expect employees to commit and be involved by submitting their thoughts and opinions.

In order to ensure the presence of a suitable environment to implement a Lean programme, or any major business change, resistance should be treated with respect and challenged with structured argument, effective communication, and promotion and encouragement for Lean. Forceful eradication of resistance before a Lean implementation is likely to harm its future success.

3.2 Optimising the human

Lean production systems have received criticism for being a dehumanising (Williams et al., 1992) and exploitative approach for the worker (Hines, Holweg & Rich, 2004). However, advocates of Lean argue that it should be perceived as more than a 'set of mechanistic, hard tools and techniques', and that consideration for human dimensions are crucial to the success of any Lean programme (Hines, Holweg & Rich, 2004). The intricacies of the human condition have factors not present in any other company asset. For example, mood, attitude, learning style, relationships, social requirements, daily, weekly and seasonal work variances, all of which influence the work quality and productivity of an individual.

An example of this is represented by the survey research. The topic of the particular enquiry focussed upon communication preference, and presented respondents with four categories: email, phone, face-to-face or a combination of the three. All respondents preferred some degree of direct social dialogue, either utilising telephones or face-to-face communication. Conversation between peers is a fundamental social requirement that simply cannot be removed from service sector systems and processes. In a situation where direct human communication was removed, the organization would most certainly encounter low morale, defiance, and even uproar amongst the workforce.

Therefore, it is apparent that there are many human factors to be considered when introducing Lean to the service industry. Processes and systems with extensive reliance upon human initiative will undoubtedly present new challenges for Lean and other process optimization strategies.

3.3 Empowerment and responsibility: A resistance to change paradox?

The ability to reiterate business change in accordance with changing business requirements and market conditions is crucial to the success of an organization. A factor seldom considered by existing Lean publications is the paradoxical implications of a successful Lean programme. Through education, empowerment and employees taking more responsibility for their own work, they evolve into free-thinking, potential obstacles to future business change. Owing to a Lean mindset, employees are likely to possess the insight and realisation to disagree and obstruct future business change. By introducing a successful Lean programme, the management may

encounter resistance to future change far greater than ever due to employee empowerment, awareness and self-actualisation.

A core principle of Lean is the empowerment of workers to enable them to take control over their own work (Womack, Jones & Roos, 1990). In instilling this philosophy, management relinquish the approach of dictating change to the workers. Thus, the management must be fully aware of not just the present implications of a Lean programme but also commit to the fundamental restructuring of the corporate change and improvement processes.

Lean is a lifelong commitment to a particular corporate philosophy and working practice that must be continually promoted and maintained to avoid further breeding of employee resistance and disaffection of workers from the management.

3.4 Techniques for success in Lean implementations

The personification of change is a common phenomenon and may reinforce resistance as it is directed towards a single, invading entity. Changes to the systems of information used within an organization through programmes and projects, such as Lean, can exhibit itself within an organization as a 'foreign invader'. The following points are presented as means to strip Lean of this foreign invader image, to inject familiarity and positivity into the programme and reduce the environment for resistance.

3.4.1 The 'Lean Team'

The case study highlights an interesting and effective approach to implementing a Lean programme within an organization: set up an in-house 'Lean Team' not to undertake Lean transformation, but to drive the programme to ensure it maintains momentum. This 'Lean Team' ideally should be composed of existing members of the organization to inject a degree of familiarity into an otherwise foreign invader. If individuals already possess a relationship and trust with members of the 'Lean Team', then they are more likely to respond in a positive manner to their objectives and initiatives.

3.4.2 Recognition and appreciation

The effectiveness of changes made to processes adhering to Lean philosophies is heavily depended upon the involvement of individuals with direct contact with such

processes. Data collected from the company featured in the case-study research showed that those participating in the programme received little or no recognition for their ideas and suggestions. Successful implementation of improvements through removing waste was branded as 'Lean successes' and publicized in progress reports and, more notably, the monthly newsletter. This commandeering of credit by the Lean programme formed elements of frustration and unwillingness for future participation in some individuals.

Recognizing and valuing the input made by participants may feed into the basic human need for appraisal and gratification, and may encourage others to seek similar recognition by developing a more positive attitude and becoming more involved in the programme.

3.4.3 Communication and feedback

Communication and participation is an essential aspect of a successful Lean programme, as well as most large-scale IT projects. However, the research shows that, despite its importance, effective communication, especially two-way, can be difficult to achieve.

'I think that the feedback on what was a quality idea and what wasn't could have been better... Rather than just saying 'no we're not going with that' actually saying 'no we're not going with that because...'. But also trying to get people to 'sell' their idea rather than simply saying 'we want to do this', try and get them to be more sensible and scientific and to justify it.' (Quotations from the interview with the Lean Engineer.)

Without the presence of a feedback mechanism, participating individuals are likely to feel that their ideas and opinions are under-valued as they receive no recognition for their input; hence willingness amongst employees to participate in future activities is likely to suffer. Therefore, it is essential to create an effective, two-way feedback mechanism outside of immediate programme activities to inform individuals on the status of their idea and perhaps challenge them to further invoke thought and idea-generation to produce more thorough, rounded ideas for improvement with quality justification.

3.4.4 A company-wide project team

The case study emphasizes the Lean doctrine that all individuals in the organization have a key role in any Lean implementation. It betrays human nature to work harder and make sacrifices to benefit a cause that is not fully understood. Hence, it is necessary to communicate effectively with the entire workforce the aims, objectives, and challenges of the Lean programme and how it can provide benefits at departmental and individual levels.

Having what is essentially a company-wide project team with all individuals treated as a project member, transparency in the project's progress, issues and milestones can make employees feel more a part of the effort and boost involvement. By allowing individuals to take ownership of the programme and the work it is undertaking has the potential to drastically reduce resistance as individuals become a *part* of the change.

3.5 Sub-optimization

When mapping and analysing corporate processes within service industry organizations, it is easy to become entangled with departmental attitudes, cultures and divisions. It is not uncommon for departments to maintain their own standards, work ethic and social environments, acting as micro-organizations within the organization. However, it is crucial that the introduction of Lean philosophies into a business environment is done so with a company-wide, holistic scope and a continued focus on *processes*. Subsequently, failing to encourage cooperation and integration between departments may severely impact the effectiveness of the Lean implementation.

A quotation from the interview research highlights this factor succinctly.

'It's easy for a department to decide what's Lean for them but it may not be lean further down the line.' *'When you put people isolated in a room with their own department, they come up with lots of ideas, of which most of them are good, but some of them could be disastrous in terms of the context of the overall business.'* (Quotation from the interview with the Lean owner.)

This leads to the concept of sub-optimization; isolated domains of the overall system implementing changes in line with their own needs. Such division of departments can have a detrimental impact, resulting in additional wastes than previously existed. What may be non-value added to one department, may be value-added to another.

The Lean engineer commented in the interview that the goal was to '*break down the barriers between departments*' through stripping the departmental labels from operating processes and encouraging people to collaborate and work together to improve the process itself. Individuals are no longer members of departments, but are members of a *common process* working toward a *common goal* of removing wastes and optimising workflow.

This unification of the workforce and camaraderie between process members can potentially result in a deeper, more appreciative understanding of the process and respect for others involved, and improve the effectiveness of Lean by generating quality suggestions for improvement and reduce resistance through understanding.

3.6 Alignment with information systems strategy

The Lean methodology does not explicitly advocate the introduction of technology or automation. However, when considering optimising data flow and effective value-adding activities, the potential benefits that IT could yield cannot be ignored. The implementation of technology into established information systems can be a complicated process, thus a key consideration with establishing large-scale IT projects in support of a Lean programme is the alignment and integration of programme initiatives with existing information systems strategies, policies and procedures.

Exceptional demands on the IT department can potentially cause reluctance in IT individuals to participate or focus on Lean related activities. Resistance from IT workers working with the Lean implementation can result in poor quality of work, communication breakdown, compromise of deadlines, and impact the reputation of the Lean programme. The IT department is an essential ally in any Lean implementation, hence resistance may not materialise solely in the workforce, but also in colleagues and companions of the Lean programme.

As such, it is advisable to either introduce or currently have in place an IT service delivery standard such as the Information Technology Infrastructure Library (ITIL). The presence of such service standards are to ensure that requirements for changes, upgrades, or new aspects of information systems in support of Lean optimizations follow established and approved protocols for implementation.

The IT infrastructure of any organization is a delicate balance of interconnected components. Drastic alterations to the configuration of information systems may produce undesired effects, notably downtime and slow response for the end-user. It is therefore in the interest of all parties that a robust framework for information systems delivery is in place to support the Lean programme and its reputation, and to ensure that modifications to the IT infrastructure are completed correctly and efficiently.

3.7 Culture shift

The environment of an autocratic management style is diminishing in practice in the present day service industry. It is possible in situations where employees are treated as machines, such as production lines, that management levels can make strategic and tactical decisions for the implementation of Lean philosophies. This approach, however, cannot be applied in situations reliant upon human initiative without encountering resistant forces attempting to fend off alterations to the status quo.

Thus, a new approach to Lean implementation must be employed in order to maximise its effectiveness and minimise resisting forces. The management is required to subtly yet convincingly incorporate Lean thinking into the organizational culture to make Lean a *part* of the business. The goal is to convert all members of the organization into Lean practitioners to make Lean a fundamental element of the business culture.

A means identified from the interview research on the case study company was to continually bombard individuals with Lean propaganda to ‘drill’ it into the culture of the company. This approach draws similarities with the ‘overwhelm’ approach to quelling resistance and instigating change (Sherman & Garland, 2007). Over time, reluctant employees will come to realise that Lean is not something that will fade away and will have no choice but to take notice and will, even unwittingly, begin to understand Lean concepts and start thinking in a Lean manner.

Organizational culture is typically built upon a foundation of attitudes, behaviours and corporate standards, and so the idea of intentionally disturbing and remoulding the organizational culture is a daunting one. However, initiating culture shift towards Lean thinking will undoubtedly contribute to the effectiveness of the Lean programme and reduce resistance, not through an exertion of power by the management, but

through the gradual erosion and breakdown of resisting forces over time as individuals come to accept that Lean thinking is both permanent and ubiquitous.

4.0 Conclusions

The Lean philosophy has evolved and spread throughout the world. The scope of the Lean approach influences key corporate aspects, for example company policies, dataflow and workflows, procedures and processes, metrics, and improvement and quality procedures. The Lean philosophy cannot be deployed without cooperation from an organization's employees.

It is evident that Lean cannot be implemented as a background, side-project, but rather should be engaged fully by every part of the organization with absolute support from project sponsors and executives. Without this fundamental prerequisite, the programme is doomed to failure before it has even commenced. Full-scale implementation and support may also reduce the environment for resistance as Lean is incorporated as a permanent core feature of the organization that cannot be ignored.

4.1 Empirical Findings

We believe that this study has contributed empirical support for the following success factors in an effective Lean programme in the service sector:

- The need to instigate culture shift through incorporation of Lean philosophies into corporate policies to make it a permanent and prominent part of the organization that reflects the continual improvement mentality of Lean.
- The value of a corporate 'Lean Team' to promote and coordinate Lean related activities, composed ideally of existing employees of the organization, including IT specialists, to inject familiarity and normality to otherwise foreign concepts.
- Establishment of an effective, robust feedback mechanism to relay the justification for or against the utilisation of a specific suggestion back to its originator.
- Public recognition of outstanding contributions to the Lean programme by employees, either individuals or groups, in corporate newsletters and reports.
- Use of a robust IT service delivery standard to ensure that changes to the IT infrastructure follow correct processes to minimise interruption to daily working.

4.2 Future Development of Lean Methodology

The ensuing recommendations are a starting point for the construction of a standardized framework for Lean implementation in environments reliant upon human initiative:

- Avoid the exertion of power toward resistance early in the programme stages as employee thoughts and opinions must be valued. Instead, acknowledge its presence and attempt to quell over time by overwhelming resisting forces through company-wide incorporation of Lean philosophies and concepts, effective communication, structured argument, and training and education.
- Transparency and communication in the Lean effort to encourage individuals to take ownership of the change effort to eradicate resistance and also boost involvement and motivation.

4.3 Further Research

This study presents only a starting point and recommends further industrial and academic research into Lean's scope to incorporate human factors, with case-study research to provide empirical data for an implementation framework.

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